

1 **1. Intr duction and Ov rview**

2
3 In the office action Claims 1-3, 5-10 and 12 were rejected; Claim 4 was
4 objected to; Claim 11 was allowed. Dependent Claims 2,3,5-7, 9 and 10 were
5 rejected under 35 U.S.C. 112, paragraph two, as being indefinite.

6 Claims 1 and 8 were rejected under 35 U.S.C. 102(b) as anticipated by or,
7 alternatively, under 35 U.S.C 103(a) as obvious over **Slate et al. (4,919, 596)**.
8 Claim 1 was further rejected under §102(b) as being clearly anticipated by
9 **Hampton et al. (5,269,659)**. Claims 2,3,5,6 and 8 were rejected under §103(a)
10 as being unpatentable over **Hampton et al.** Finally, Claim 12 was rejected under
11 §103(a) as being unpatentable over **Slate et al.** or **Hampton et al.**

12 A brief summary of **Slate et al.** and **Hampton et al.** is as follows:

13 **Slate et al.** teaches a feedback controlled fluid delivery and control
14 apparatus incorporating a DC motor and a piston pump embedded into a
15 disposable output cassette for delivering fluid to a patient. The piston pump is
16 driven at intervals depending on feedback from drive sensors, the output
17 cassette and monitoring means. Control of motor speed is via a controller which
18 computes "the motor voltage pulse width based on feedback information from an
19 encoder" (column 3, lines 61-64).

20 **Hampton et al.** teaches a DC motor-driven diaphragm pump with a closed
21 loop servo control system for maintaining constant fluid flow through the pump
22 (see **Hampton et al.** column 1, lines 51-53). As regards the input to the pump
23 motor, it is stated in column 3 lines 20-22 that "The speed of pump motor
24 operation is related to the duty cycles of the pulses applied to the windings
25 thereof." This clearly indicates that the pump motor in **Hampton et al.** is a DC
26 motor where the speed is determined not by motor driving supply frequency but
27 by the effective DC current through the motor, which results from and is
28 proportional to the applied pulse width.

1 The motor-pump in Applicants' disclosure is a permanent magnet AC
2 synchronous motor pump which cannot be controlled by simply varying the
3 effective applied voltage by pulse width modulation as in the disclosures of **Slate**
4 **et al.** or **Hampton et al.** Worthy of note is that DC motors do not generally
5 respond to a varying frequency of an AC drive in any predictable manner.

6 Novelly, applicants' **combination** of motor driving supply frequency
7 control **and** Pulse Width Modulation control are used to considerably extend the
8 working speed range over which an AC synchronous motor pump can be usefully
9 varied.

10 Before addressing the specific reasons for rejection in the office action, it
11 is first necessary to address the issue of DC motors versus AC synchronous
12 motors as recited on page 3 section 5 of the office action. ('office action' is further
13 referred to as 'OA' in this amendment),
14
15

16 **2. That the Applicants Teach an AC PMSM and not a Brushless DC**
17 **Motor as Stated in the Office Action (OA Section 5)**
18

19 In Section 5, page 3 of the office action a classification of DC motors is
20 given wherein DC motors are classified as falling into one of two categories -
21 either *brush type* (type a) or *brushless type* (type b). A definition of each type is
22 then given.

23 To quote the definition of a brushless dc motor (type b) as recited in the
24 OA:

25 "Brushless dc motor. This type of motor has a permanent magnet
26 rotor and a stator with phase windings. This motor requires an
27 electronic commutation, a rotor position sensor and an inverter
28 controlled by the signals from the rotor position sensor. The motor

1 speed/torqu can be controlled by the frequ ncy of the pulse width
2 modulation of the inverter, therefore, this is a synchronous motor."

3
4 Examiner gives no authority for this definition. As defined above, a DC
5 motor of type b is **not** a synchronous motor. Controlling the "frequency of the
6 pulse modulation" is not equivalent to controlling the frequency of the signals
7 applied to the motor windings. Rather, such control, as in the definition above,
8 produces an effective DC voltage (a DC voltage applied with an effective duty
9 cycle) applied to the motor windings which in turn affects the speed of the DC
10 motor. This by itself does not and can not produce synchronization.

11 Based on the above definition given by the Examiner, the Examiner
12 concludes (OA section 5 last paragraph) that "The so-called 'AC permanent-
13 magnet synchronous motor' (or AC PMSM) defined by applicants is actually a
14 brushless dc motor of the type b above."

15 Synchronous motors are well known in the art to be **AC** and not DC
16 devices. For example in Walker, P., Ed (1988) Chambers Science and
17 Technology Dictionary. Chambers/Cambridge. New York. pg 878, a synchronous
18 motor is defined as an "A.c. electric motor designed to run in synchronism with
19 supply voltage." Such motors retain synchronization with the **frequency** of the
20 voltage applied to the motor. For two pole synchronous motors the speed of the
21 motor is equal to the frequency of the source. Beyond extremely narrow
22 frequency limits, synchronous motors either run at the source frequency or stall.
23 The present invention overcomes such a limitation and considerably extends the
24 controllable speed range of an AC PMSM pump.

25 By definition a DC motor utilizes **commutation**, i.e., a mechanism by
26 which the magnetic field direction (rotor or stator) is switched in a strict phase
27 relationship to the mechanical position of the rotor. This commutation may be
28 either electronic using a rotor position sensor to provide a switching signal to an

1 electronic means of switching (transistors, FETs, IGBTs etc.) (OA type b) or may
2 be purely mechanical as in the case of a conventional segmented
3 commutator/ brush motor (OA type a).

4 In the disclosure an AC synchronous motor is described. For this type of
5 motor there is no commutation and magnetic field switching is derived without
6 any feedback mechanism from the rotor. It is important to realize that a
7 fundamental feature of an AC synchronous motor is the reliance of the motor
8 speed upon an **externally** derived AC signal **frequency** and *not* upon the
9 applied voltage.

10 Very clearly, neither **Slate et al.** nor **Hampton, et al.** teaches or suggests
11 a synchronous AC motor nor for that matter any AC motor. Their disclosures are
12 confined to DC motors and no contention of the Examiner can make them into
13 AC motors as claimed. In contradistinction, applicants' AC motor pump control is
14 not met by the disclosures of the cited patents. The claims herein are clearly
15 patentable over the cited references.

16 Examiner's position amounts to the application of hindsight, and, in effect,
17 drawing upon applicants' disclosure to supply what is missing in the two applied
18 references. The Federal Circuit has sternly cautioned against the use of hindsight
19 in determining whether an invention was obvious in light of prior art as of the date
20 of the invention. Panduit Corp. v. Dennison Mfg. Co., 774 F.2d 1082, 227 USPQ
21 337, 342 (Fed. Cir. 1985). See also Zurko, F.3d, 887, 42 USPQ2d 1476 (Fed.
22 Cir. 1997).

23
24 **3. Rejections of Claims 2, 3, 5-7, 9 and 10 under 35 U.S.C. 112, Paragraph**
25 **Two Are Overcome (OA Section 2)**

26
27 Applicants have canceled Claims 5 and 6. Claims 2, 3, 7, 9 and 10 remain under
28 consideration as regards §112 rejection. These claims were rejected in part

1 based on improper dependency or other indefinite problems. Claim 2, 3, 7, 9 and
2 10 have been amended to overcome problems regarding antecedent basis.
3 Claims 4 and 8 have also been amended to overcome a problem with antecedent
4 base in light of the modified preamble of amended Claim 1. New dependent
5 Claim 13 has been added to overcome a problem with antecedent base in un-
6 amended Claim 9.

7
8
9 **4. Rejections of Claims 1 and 8 under §102(b) and §103(a) Over Slate et al.**
10 **are Overcome (OA Section 5)**
11

12 Applicants have amended Claim 1 to more clearly annunciate the novel
13 and non-obvious features over Slate et al. and to further differentiate over the
14 prior art. However, the arguments to be forwarded apply in major part to the
15 claim language objected to in the OA some of which still appears in the amended
16 Claim 1.

17 In the OA it is stated that the Slate et al. Fig. 3 shows a pumping cycle
18 which is a "predetermined manner." This is a strained interpretation of
19 "predetermined manner" as written in un-amended Claim 1. The pumping cycle
20 in Fig. 3 refers to a complex fill cycle of a cassette involving inlet and outlet
21 valves. This bears at best a strained relationship to "varying the flow rate of a
22 pump" as in Claim 1. The OA also refers to Slate et al. Fig. 5 which shows a
23 "rate command" which is stated as "another 'predetermined manner'." The rate
24 command 104 in Fig. 5 - a block diagram of the delivery rate control system - is
25 also a strained interpretation of "predetermined manner" as relates to Claim 1.
26 The rate command in Slate et al. is actually an internally generated value as part
27 of a feedback control system to control the filling of the cassette. It is not
28 "predetermined" but depends on dynamic inputs from drive sensors, the output

1 cassette and monitoring means. These constitute strained interpretations of Slate
2 et al. and argue against an obviousness rejection under §103(a). Nevertheless,
3 in amended Claim 1, applicants have replaced "predetermined manner" with
4 more limiting language to overcome Examiner objections to any potential
5 vagueness in "predetermined manner" as recited in Claim 1.

6 In the OA, Slate et al. Fig. 5 is also referenced with respect to a
7 "microprocessor 70 and pulse generator 78: a signal 'PULSE WIDTH' is inputted
8 to the pulse generator 78." In Slate et al, simple pulse width modulation is
9 employed wherein pulse width and **not** frequency is varied. Even if Slate were to
10 vary frequency, it would have no meaning in the Slate case, as Slate is
11 controlling a DC not an AC motor.

12 Applicants note that for an AC PMSM and varying pulse width **alone** (i.e.
13 maintaining a constant drive frequency over a range of pulse widths) would not
14 cause the motor to lose synchronization (i.e. it would still run at a speed
15 synchronized with supply frequency), but that outside this range the motor would
16 slip, stall or otherwise unpredictably fail to stay in synchronization. In other
17 words, the motor, by variation of pulse width alone, would not have variable
18 speed as in the DC motor case in Slate, et al. Applicants' control clearly cannot
19 be anticipated from the Slate et al. DC control.

20 Further, Slate et al. does not teach what the Examiner is relying on to
21 support rejection based on §103(a). Claim 1 is clearly allowable over the Slate et
22 al. Claim 1 recites a micro controller with means calculating the pulse width **and**
23 frequency timing for generating pulse switching signals to control the motor
24 pump. As is noted above, simply controlling pulse width for an AC synchronous
25 motor would have no effect on motor speed. It has been previously shown in
26 Section 2 above that applicants' motor is *not* a DC motor. Claim 1 is novel since it
27 recites the variation of the **combination** of pulse width and frequency to control
28 the speed of the motor pump which extends the flow range of operation of the AC

1 PMSM pump. This differentiates not only for the instant DC cas (for which
2 frequency variation would have no benefit) but also differentiates over the prior
3 AC PMSM art.

4 Claim 1 is further non-obvious over Slate et al. since controlling frequency
5 would have absolutely no effect on the speed of the Slate et al. DC motor.
6 Consequently, Slate et al. does not teach what is relied upon as the basis for a
7 §103(a) rejection.

8 Finally, it is stated in the OA that "Slate, et al. teach 'DC motors' (see
9 column 3, line 37, for example) and 'pulse width' (see column 6, line 48, for
10 example. These together show that Slate's motor is an AC PMSM as defined by
11 applicant." The arguments above show that the combination of pulse width and
12 frequency (elucidated in Claim 1) while being advantageous in the case of
13 controlling an AC PMSM pump, are of no benefit in the DC case of Slate et al.
14 Examiner is relying on what Slate et al. do not teach in basing a §103(a)
15 obviousness rejection of Claim 1. Based on the applicants' arguments in Section
16 2 above, applicants' motor is an AC synchronous motor and Slate et al. teaches
17 a DC motor. To repeat, while pulse width modulation can control a DC motor as
18 in Slate et al., pulse width modulation **alone** cannot control the speed of an AC
19 synchronous motor as recited by applicants and elucidated in Claim 1.

20 Nevertheless, applicants have amended Claim 1 to more specifically
21 overcome Examiner objections and to more clearly spell out the unique features
22 of the invention. Amended Claim 1 specifically limits to AC permanent magnet
23 synchronous motor (PMSM) pumps. Further, amended Claim 1 language spells
24 out in more limiting language the calculation of frequency and related pulse width
25 and specifically calls out an AC signal - which more clearly differentiates from the
26 prior art.

27 Regarding Claim 8, Claim 8 recites a "line receiver/transmitter for
28 interfacing an external data input/output signal to said micro-controller". This is

1 novel and overcomes §102(b) rejection in that said micro-controller can
2 communicate dynamically *both* ways with an external device to affect control of
3 the motor pump. One example of such an interface is with an external DMX
4 controller operating outside of the controller environment. Slate et al teaches no
5 such interface and such interface cannot be anticipated from the reference.

6 Examiner states that Slate et al Figs. 1, 2 and 5 all show input
7 "commands" and that these commands receive input information via various
8 means including a key pad, an input knob or potentiometer. Examiner states that
9 "these input knob, potentiometer, keypad are line receiver/transmitter interfaces."
10 Slate et al. does not teach what examiner is relying on to base a §103(a)
11 rejection. In Slate et al. these input "commands" fix parametric values to govern
12 the feedback control system that controls the filling of the cassette. The line
13 receiver/transmitter of Claim 8 receives external dynamic values which are used
14 to dynamically change the output of the motor pump directly *and transmit such*
15 *changes back to the external device.*

16
17 **5. Rejection of Claim 1 under §102(b) Over Hampton et al. is Overcome**
18 **(OA section 6)**
19

20 Examiner rejected Claim 1 as being clearly anticipated under §102(b) by
21 Hampton et al. Hampton et al. teaches a DC motor-driven diaphragm pump with
22 a closed loop servo control system for maintaining *constant* air flow through the
23 pump.

24 Applicants teach an AC synchronous motor which cannot be controlled in
25 the manner taught by Hampton et al. Applicants' Claim 1 is not anticipated under
26 §102(b) by Hampton et al. for the following reasons: Claim 1 and amended
27 Claim 1 recite a novel manner of controlling an AC synchronous motor (see
28 Section 2, above) and not a DC servo controlled motor. It makes no sense to

1 control the DC motor of Hampton et al. in the manner annunciated in Claim 1.
2 There is no feedback control in applicants' Claim 1 or amended Claim 1.
3 Feedback in Hampton et al. is provided to maintain constant not varying flow
4 from the pump as in Claim 1 and amended Claim 1.
5 The OA references Fig. 1 of Hampton et al. with flow rate reference 121 and
6 timer 118 as constituting alone or together a "predetermined manner." Relying
7 on feedback elements - flow rate reference 121 and timer 118 - as constituting a
8 "predetermined manner", is clearly a strained interpretation of "predetermined
9 manner" as recited in Claim 1.

10 Examiner notes that Hampton et al. vary pulse width and frequency and
11 refers to column 4, lines 47-49 which state:

12 "The *pulse width modulator* used to implement pump motor drive
13 circuit **123** produces pulses of predetermined frequency and a
14 nominal width." (*italics, applicants*)

15 The "frequency" referred to in Hampton et al. is the frequency input to the pulse
16 width modulator (which varies duty cycle) and is not equivalent to "frequency" as
17 in Claim 1 and amended Claim 1 which is used for synchronous drive. Hampton
18 et al. does not teach what is relied upon in OA regarding a potential §103(a)
19 rejection.

20 Fig. 2 in Hampton et al. shows a flowchart of a feedback control system to
21 maintain constant pump output. That Claim 1 and amended Claim 1 both recite a
22 "programmable" micro controller and Hampton et al. indicates programmability of
23 a feedback control system is at best a strained interpretation of "program" or
24 "programability."

25 Examiner points out that a switching circuit in Hampton et al. is inside
26 drive circuit **123**. While there is a pulse width modulator inside drive circuit **123**,
27 this is not an "output switching circuit" as enunciated in Claims 1 and amended
28 Claim 1.

1 In the OA (page 5, first paragraph) Examiner notes that Hampton et al.
2 repeatedly teach "pulse width". Applicants have no disagreement with this.
3 However, Examiner's contention that "These all together indicate that Hampton
4 et al. motor is an AC PMSM as defined by applicant." constitutes a misreading of
5 Hampton et al. The Hampton et al. motor is a DC servo-controlled motor and is
6 not an AC device. Hampton et al. is controlled by the output of a pulse width
7 modulator which outputs a pulse of variable duty cycle which is converted within
8 the motor to an averaged effective DC current by which the speed of the motor is
9 controlled. Claim 1 and amended Claim 1 enunciate the calculation of **both** pulse
10 width **and** frequency to control the motor pump. Using similar arguments as
11 described in Section 4, controlling frequency as in Claim 1 and Claim 1
12 (amended) would be essentially meaningless in the Hampton et al. case. Claim 1
13 and amended Claim 1 are novel over Hampton et al. because controlling both
14 frequency and pulse width would make no sense in the Hampton DC pump motor
15 as simple pulse width modulation would suffice to control motor speed.

16 Clearly, amended Claim 1 is allowable over Hampton, et al.
17

18 **6. Rejections of Claims 2,3,5,6, and 8 under §103(a) Over Hampton et al.**
19 **are Overcome (OA section 7)**

20 Applicants have cancelled Claims 5 and 6. Objection to Claims 2, 3 and 8 remain
21 with respect to **§103(a)** rejection.

22 Regarding Claim 2, Examiner states that Hampton's motor is an AC
23 PMSM as explained in OA section 6 above. This is clearly incorrect. Hampton
24 does not teach what is relied upon by Examiner in basing a **§103(a)** rejection of
25 dependent Claim 2. Hampton clearly teaches a DC motor which is controlled by
26 pulse width modulation. The novel and non-obvious control of **both** pulse width

1 and frequency as in parent Claim 1 and Claim 1 (amended) can only apply to an
2 AC PMSM pump (Claim 2) and not the DC motor pump of Hampton et al. It is
3 further noted that the diaphragm pump in Hampton has neither a rotor nor an
4 impeller and therefore Hampton does not teach what is additionally relied upon to
5 base a **§103(a)** rejection of Claim 2. Claim 2 is clearly allowable over Hampton et
6 al.

7 Regarding Claim 3, examiner states that "a rigid coupling is required for
8 almost all motor/pump systems." Hampton et al. teaches a diaphragm pump
9 having *neither a rotor nor an impeller*. The Hampton motor is rigidly coupled to an
10 eccentric which drives the diaphragm via a rod (see Hampton Fig. 1). Under
11 **§103(a)**, the rotor impeller/ assembly in Claim 3 would require the rotor to be
12 rigidly coupled to the pump *motor* which would render the AC PMSM pump of the
13 applicants' Claim 3 inoperative. Hampton et al. does not teach what is relied
14 upon in the OA to base a **§103(a)** rejection of Claim 3.

15 On the basis of **§103(a)** rejection, the majority of AC PMSM have
16 impeller/rotor assemblies with a limited-motion engagement coupling; these
17 couplings allow up to one-half turn of free (non-rigid) impeller rotation with
18 respect to the rotor. Without limited-motion couplings, these AC PMSM pumps
19 would simply not start reliably, if they would start at all. Claim 3 is non-obvious as
20 it teaches away from the prevailing AC PMSM art.

21 Regarding Claim 8, Examiner states that in Hampton "the setting of timer
22 118 (such as rotary wheels) is a line receiver/transmitter interface." This
23 constitutes a strained interpretation of "line receiver/transmitter" as enunciated in
24 Claim 8. Note that timer 118 in Hampton et al. is simply provided to turn the
25 pump on at predetermined intervals (that is, one sets an interval value on the
26 timer and the timer - which could be a cam-operated relay - then periodically

1 activates the pump). It is not obvious to "extrapolate" the **one-way** timer 118 in
2 Hampton et al. into the **two-way** line receiver/transmitter in Claim 8 for
3 interfacing a two-way (receive/transmit) input to a micro-controller. Claim 8 is
4 clearly allowable over Hampton et al.

5
6 **7. Rejection of Claim 12 §103(a) Over Hampton et al. or Slate et al. is**
7 **Overcome (OA section 8)**

8 Claim 12 has been amended to depend on amended Claim 1. This
9 overcomes Examiner objection to Claim 12 as having the same subject matter as
10 un-amended Claim 1 since Claim 12 is now written in dependent form. Amended
11 Claim 12 also contains language to more clearly enunciate the coupling of the
12 fountain to the apparatus in amended Claim 1.

13 Regarding **§103(a)** rejection of Claim 12, Examiner states that a "fountain
14 element together with a motor" is well known art. Examiner sites no prior art as a
15 basis for this position. It is not "well known art" nor would it be fruitful to directly
16 couple a fountain element to an AC synchronous motor pump to obtain a variable
17 water pattern, as such coupling without reading on Claim 1 would yield *constant*
18 flow and *not* the desirable *variable* flow patterns of Claim 12.

19 Examiner states that "it would have been obvious to a skilled person in the
20 art to use the Slate or Hampton motor and controller to control a fountain element
21 in a fountain to achieve the same subject manner" as enunciated in Claim 12.
22 Slate et al. teaches an intermittently driven piston pump; this would be wholly
23 inappropriate to drive a fountain as enunciated in Claim 12 or for that matter any
24 fountain designed for generating variable output flow patterns. Hampton teaches
25 a diaphragm pump also designed for intermittent operation (timer 118), however

1 in air. To the applicants' knowledge diaphragm pumps have not been used in
2 liquid fountain applications since even if driven continuously, they would tend to
3 give a pulsed output even at a fixed drive speed.

4 In both Slate and Hampton, feedback controllers are employed to control
5 their respective pumps. These controllers cannot cause a variation in output of
6 an AC PMSM pump as in Claim 12.

7 Based on these arguments, applicants contend that the fountain and
8 fountain element in Claim 12 (amended) are allowable subject matter under Slate
9 et al. or Hampton et al.

10 Applicants respectfully request that Examiner does not make a restriction
11 requirement dividing Claims 1-12 into two groups. If however, Examiner decides
12 to impose a requirement for restriction of invention, then he is authorized by
13 applicants to cancel Claim 12.

14 **8. Regarding Drawing Correction (OA section 9)**

15 In "A special message from the examiner", Examiner requires labeling of
16 boxes in Fig. 1 with descriptive titles. Applicants are implementing Examiner's
17 requirement by the proposed drawing changes to Fig. 1 submitted with this
18 amendment.

19 Applicants note that the box identified as "170" in Fig. 1 has been inadvertently
20 mislabeled and should have been labeled "270". Label 270 is specified in the
21 disclosure as a potentiometer and is the correct numeral to describe the box in
22 question. There is no reference numeral "170" in the disclosure. The proposed
23 drawing change is shown on Fig. 1, submitted with this amendment, wherein
24 numeral [170] is replaced by numeral 270.

9. Request for Reconsideration

Applicants have reviewed references cited in the OA but not relied on: Arvidson et al. (US-RE-35,362), Kaffka et al. (US-4,705,216), Alba (US-4,844,341), Alba (US-5,069,387), Ting (US-6,206,298) and Hall (US-6,276,612). These references do not show applicants' invention or render it obvious.

Claim 1 was amended to further enunciate the unique features of the invention, to further differentiate from the prior art and to more specifically overcome §102(b) and §103(a) objections based on Hampton et al. and Slate et al.

Claim 2 was amended to correctly refer to amended Claim 1

Claim 3 was amended to correct problems of antecedent base.

Claim 4 was amended to depend on amended Claim 1.

Claim 7 was amended to correct problems of antecedent base.

Claim 8 was amended to correct problems of antecedent base. Arguments were also forwarded to overcome §102(b) and §103(a) rejection.

Claim 9 was amended to correct problems of antecedent base.

Claim 10 was amended to correct problems of antecedent base.

Claim 12 was amended to further enunciate the unique features of the invention. Applicants request that if Examiner decides to impose a requirement for restriction of invention, then he is authorized by applicants to cancel Claim 12.

Claim 13 was written to correct problems of antecedent in un-amended Claim 9.

Claim 14 was written to enunciate the manner of calculation of motor pump voltage and frequency for varying the flow rate of an AC PMSM.

1 Claim 15 was written to enunciate the simultaneous and r lated variation
2 of the voltage and frequency of an AC signal applied to an AC PMSM for
3 extending the attainable range of pump flow rates.

4 Proposed drawing changes to Fig. 1 have been made and are submitted
5 with this amendment.

6

7 **10. Conclusions and Request for Claims Drafting Assistance**

8 Based on the arguments forwarded by the applicants to counter Examiner
9 objections, based upon changes to the claims to more clearly enunciate the
10 features of the invention, based on changes made to specifically address
11 Examiner objections, the applicants submit that amended Claims 1, 2, 3, 4, 7,8-
12 10 and 12 are clearly allowable over the cited references and solicits
13 reconsideration and allowance.

14 It is also respectfully submitted that new dependent Claim 13 be
15 considered for allowance since it simply corrects an antecedent problem in the
16 un-amended Claim 9.

17 It is submitted that patentable subject matter is clearly present as
18 elucidated in the amended claims and new Claims 14 and 15.

19 If the Examiner agrees that patentable subject matter is clearly present but
20 does not feel that the present claims are technically adequate, applicants
21 respectfully requests that the examiner write acceptable claims pursuant to
22 MPEP 707.07(j).

23

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Very Respectfully,

Chris S. Brunt
Applicants Pro Se

Gary R. Fisher

Dated: 17 JULY 2002

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Certificate of Mailing

I hereby certify that this correspondence and attachments, if any, will be deposited with the United States Postal Service by Express Mail # ET556956586 US, postage prepaid, in an envelope addressed to: Box Non Fee Amendment, Commissioner for Patents, Washington, D.C. 20231 on the date below.

Date: 17 JULY 2002

Inventor's Signature: